

TABLE A  
Data Quality Objectives Seven-Step Planning Approach

Step 1 Problem Statement	Step 2 Identifying the Decisions	Step 3 Decision Inputs	Step 4 Study Boundaries	Step 5 Decisions Rules	Step 6 Tolerance Limits on Errors	Step 7 Optimization of Sample Design
<p>The question to be resolved by this SR is whether any contamination from the sources of mine waste in upper Cement Creek have migrated into the environment where it is impacting environmental and/or human health targets. The sources from the upper Cement Creek mine sites may affect the surface water in Cement Creek and the Animas River. Mining-impacted surface water from Cement Creek sources may impact Cement Creek and Animas River wetlands. Impacts to water quality from Cement Creek sources may be impacting Animas River fisheries.</p>	<p>Historic information about the upper Cement Creek mine sites suggests a concern for the likelihood of release of heavy metal contamination and the potential for release of PCBs into Cement Creek and the Animas River. The primary goal for this SR is to determine the presence and extent of surface water and sediment contamination and, if contamination is found, determine if it is attributable to the upper Cement Creek mine sites, and to what degree.</p> <p>The primary study questions for this investigation are:</p> <ul style="list-style-type: none"><li>Do Cement Creek mine waste piles and draining adits contain elevated concentrations of metals?</li><li>Are the nearby surface waters and associated sediment (i.e., Cement Creek and the Animas River) impacted by the sources?</li><li>Do sample concentrations exceed applicable benchmarks?</li><li>If elevated metals and PCBs are identified, are the elevated constituents attributable to Cement Creek sources?</li></ul>	<p>There are two media at the upper Cement Creek drainage, surface water and sediment, which may contain contamination that may pose a risk to the environment or human health. The potential source locations include waste rock/tailings piles, the discharge from the adits of the upper Cement Creek mines, and surface water flow from the waste piles. Waste rock piles (soil) are another potential source, and while low population density exists in the area, the soil may be impacting wetlands. Samples will be analyzed for TAL metals. In addition to metals contamination, the potential exists for PCB contamination at the mines due to equipment use. Selected source and sediment samples will be analyzed for PCBs in addition to metals.</p> <p>The following data will be used to guide decision-making at the site:</p> <ul style="list-style-type: none"><li>Field data and documented observations from surface water, sediment, surface soil (source), and mine drainage (aqueous source) sampling;</li><li>Analytical data from surface water, sediment, surface soil (source), and mine drainage (aqueous source) samples to determine if contaminants from the upper Cement Creek mine sites have migrated;</li><li>Identification and documentation of environmental and human health targets potentially impacted by migration of contaminants from the upper Cement Creek mine sites into surface water and sediment; and</li><li>Comparison of analytical results to Maximum Contaminant Levels (MCLs), EPA Regional Screening Levels (RSLs), applicable Superfund Chemical Data Matrix (SCDM) benchmarks, and background levels.</li></ul>	<p>The pathway of concern at the Upper Animas Mining District site is the Surface Water Pathway in Cement Creek and the Animas River. The soil pathway may be a concern, but is not considered to have high exposure due to low population density.</p> <p>Potential human health and environmental targets of the Upper Animas Mining District site include the wetlands and aquatic environments downstream of the upper Cement Creek Mine sites.</p> <p>Samples to be collected and analyzed include surface water and sediment from Cement Creek, the Animas River, and Mineral Creek. In addition, samples were collected from the adits of the Gold King 7 Level Mine, Red and Bonita Mine, Mogul Mine, Grand Mogul Mine, and the American Tunnel. Soil (source) samples were collected from the Red and Bonita Mine, Mogul Mine, North Mogul Mine, Mogul Stope Complex, and Grand Mogul Mine.</p> <p>Field activities were conducted in October and November 2010.</p>	<p>The potential receptors at the Upper Animas Mining District site include aquatic habitats and wetlands. Analytical results for surface water will be compared to Colorado Water Standards and appropriate background samples. Analytical results for sediment will be compared to background sediment results. No benchmarks are established for sediment.</p> <p>Note that some ESAT detection limits are higher than SCDM, Risk-Based Screening Levels (RBSLs), and/or Soil Screening levels (SSLs) for some substances.</p> <p>If contaminants are detected at the Upper Animas Mining District site at levels below 3 times background for those contaminants, then no removal or remediation needs to be done. If contaminants are present at the property at levels equal to or greater than 3 times background, further evaluation may be needed to further characterize the extent of the contamination.</p>	<p>Background sediment and surface water conditions will be determined.</p> <p>Statistical sampling will not be performed; therefore, tolerance limits will not be calculated.</p> <p>Soil (source) samples will be collected to identify potential contaminants and characterize potential areas of contamination.</p> <p>Surface water and sediment samples will be collected to determine the mines' impact on surface water.</p> <p>UOS TSOPs will be followed, and any deviations from the FSP will be documented.</p> <p>Issues requiring corrective actions, if needed, will be documented and reported to the EPA Site Assessment Manager.</p> <p>All data will be reviewed, verified, and validated to ensure that they are acceptable for the intended use.</p>	<p>Sample locations have been selected based upon an understanding of known environmental conditions and required information. The following activities will be performed on site to determine if sample locations must be adjusted, and how to proceed with sampling:</p> <ul style="list-style-type: none"><li>Collect surface water and sediment samples to determine the extent of metals in Cement Creek and the Animas River and collect samples appropriately to provide information as to attribution from specific mines or gulches;</li><li>Progress from farthest downstream sample location to prevent cross-contamination;</li><li>Perform biased grab sampling in accordance with the TSOPs and site assessment protocols;</li><li>Identify potential human health and sensitive area targets for the Surface Water Pathway; and</li><li>Collect soil (source) samples to characterize waste materials present in mine dumps.</li></ul> <p>Criteria for data quality parameters are presented in Section 12.0.</p> <p>Data followed the regional Instructions for Interim Emergency Response Electronic Data Deliverable and will include the recommended data elements.</p>